

# D O W N S I Z I N G

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While I was a Safety & Training Advisor, I spent a considerable amount of time telling people they shouldn't be loading their canopies so heavily. 90% of the time it didn't work. Skydivers can have a bit of an ego and when I told them they probably shouldn't downsize yet they heard "I think you're a crappy canopy pilot who can't handle a smaller wing." So they downsized and broke their legs, backs and pelvises with some regularity.

A few years back I met up with Brett, one of the people I'd been lecturing to while I was an S+TA. He told me that he wished he'd listened to me back then. He had broken his femur during a botched landing, been out of the sport for a while and then came back and really learned to fly his canopy. He took a canopy control course and actually 'upsized' to get more performance out of his canopy. He ended up coming in first in one of the events at the PST that year.

That started me thinking. Maybe the approach I was taking was wrong. Since jumpers tend not to listen to other people who tell them they're not as good as they think they are, perhaps if you could give them better tools to evaluate themselves they could make better decisions about canopy choices. It's one thing to have some boring S+TA guy give you a lecture about not having any fun under canopy, quite another to try to perform a needed manoeuvre under canopy - and fail. In that case there's no one telling you that you can't fly the canopy, it's just blatantly obvious.

So I came up with a list of canopy control skills everyone should have before downsizing. Some are survival skills - being able to flat turn would have saved half a dozen people this year alone. Some are canopy familiarisation skills - being able to do a gentle front riser approach teaches you how to judge altitude and speed at low altitudes, and how to fly a parachute flying faster than its trim airspeed - a critical skill for swooping. It's important to do these BEFORE you downsize, because some manoeuvres

are a little scary (turning at 50 feet? Yikes!) and you want to be on a larger canopy you're completely comfortable with before trying such a thing.

The short version of the list is below. Before people downsize, they should be able to:

- flat turn 90 degrees at 50 feet
- flare turn at least 45 degrees
- land crosswind and in no wind
- land reliably within a 10 metre circle
- initiate a high performance landing with double front risers and front riser turn to landing
- land on slight uphills and downhills
- land with rear risers

## 1. Flat turn 90 degrees at 50 feet.

This is the most important of all the skills. The objective of this manoeuvre is to change your direction 90 degrees losing as little altitude as possible, and come out of the manoeuvre at normal flying speed. Coming out at normal flying speed means you can instantly flare and get a normal landing. If you can do this at 50 feet and come out of the manoeuvre with normal flying speed at 5 feet, you can flare and land normally.

Every year people die because they decide they simply 'have' to turn at 100 feet and know only one way to do it - pull down a toggle. The parachute dives and they hit the ground at 40mph. To prevent this, not only do you have to know how to flat turn, but you have to practice it enough that it becomes second nature. Then when you do need it, you won't have to think about it.

To pull off this manoeuvre, start by toggle turning the parachute gently. IMMEDIATELY follow that with some opposite toggle. The idea is that you want to flare just a little to counteract the canopy's desire to dive. Continue adding opposite toggle until you've stopped the turn. At this point let both toggles all the way up. If you feel the parachute accelerate after you let go of the toggles (i.e. it feels like you just flared) use less opposite toggle next time. If you feel like the parachute is diving, like you just did a toggle turn, use more opposite toggle next time. Basically you want to start the turn with one toggle,

# C H E C K L I S T

stop it with the other one and use just enough toggle to keep the wing from diving but not so much that it does a flare.

It should go without saying that this manoeuvre should be practised up high before you ever try it down low. If and when you do try it out low, start at lesser angles (i.e. try a 15 degree turn first). Make sure the pattern is clear and make sure conditions are good (soft ground, good winds.) Work up gradually to a full 90 degree turn. I do think it's important to try at least a gentle flat turn very low - we are horrible judges of exact altitudes when we're at 1,000 feet and it's hard to tell if you've lost 50 feet or 200 in a turn. By trying it out down low, you'll get a better sense of what it can do for you and you'll have the "sight picture" better set in case you have to use it for real one day.

A variation on this is to go to half brakes and then let one brake up. This gives you a flat turn, but by flaring first you "use up" some of the canopy's energy so you can't turn as effectively. On the plus side the turn happens more slowly. If you are about to hit a tree and want to make a last minute turn, this variation might be the way to go, as it combines a turn and a flare, thus reducing your speed before impact. This might be a good way to make your first flat turns before transitioning to the less-braked variety.

- 2. Flare turn at least 45 degrees.** This does two things - it gives you another tool in your arsenal to dodge last minute obstacles and teaches you to fly your canopy all the way through to the landing. The #1 mistake jumpers with new HP canopies make is to "reach out to break their fall" while they're flaring; this of course turns the canopy in the direction they are reaching. Most people decide that this is due to a side gust just as they're landing. I remember one jumper who, amazingly enough, experienced a side gust seconds before he landed (and always from the right) 40-50 times in a row! Learning to flare turn will help eliminate this problem.

To flare turn, start with a normal flare, then flare slightly more with one toggle. The canopy will turn. Bring the other toggle down to match it and the canopy will straighten out. It's a dynamic process - rather than put the toggles at a certain position, you have to speed up one toggle for a second, then speed up the other to match it, before you level them and finish the flare. If you balloon upwards, then don't flare as quickly. If you drop to the ground, bring both toggles down more aggressively when they are 'split.' One thing that helps people is to think about where your canopy is rather than what it's doing. Use the toggles to put it off to one side for a moment, then use them to put it back over your head.

This can be hard to practice with a large canopy. I can pull off a 45 degree turn on a Manta, but the flare is over so fast that it's hard to explain what I just did. It's much easier on a canopy loaded around 1:1, so you may want to wait on this one until you get to that loading.

Note that if you combine a flare turn with a flat turn, you can pull off nearly a 180 degree turn at just above 50 feet. Also note that knowing how to do flat and flare turns doesn't mean you can always turn at 50 feet and get away with it - sometimes it's better to accept a downwind landing than make a turn at a dangerously low altitude. But if you do have to turn low (say, you're on course for the electrified fence around the pit bull farm) a flat/flare turn will let you either turn and land normally or turn and minimise the damage caused by landing in a turn.

- 3. Land crosswind and in no wind.** These are straightforward. No wind landings are pretty easy; the only issue is that your perception of speed and altitude will be off. Since you seem to be moving faster over the ground when there's no wind (which you actually are) it can seem like a good idea to add just a little brake to 'slow you down' before you land. Resist that urge! Keep that speed in your canopy; you can turn the speed into a good flare only if you start the flare with decent (i.e. full flight) speed.

Crosswind landings can be a little more tricky because of that strong tendency to want to "reach out to break your fall." Counter this by flaring with your hands in towards the centre of your body. You may have to PLF on these landings, since you'll have some decent forward speed and have some sideways motion from the wind. If you want to get fancy, try a flare turn after you start your flare on the crosswind landing - you can easily pull off a stand-up landing if you get turned enough before you put your feet down.

If these work well you may want to try a downwind landing. The benefit to doing that is it will prepare you to accept a downwind landing in the future - you won't be tempted to turn too low to avoid it. Choose an ideal day for this one, with a slippery landing area (wet grass is perfect), low winds and a clear landing area. Prepare to PLF and think about "laying it down" on your thigh as you land to start sliding. You can slide across grass at 30mph without getting hurt, but planting your feet and cart wheeling at those speeds can be very dangerous.

- 4. Land reliably within a 10 meter circle.** This is essentially the PRO requirement. This is critical because your accuracy skills are what will keep you from having to turn low. It's very comforting to know that you can land in any 50ish foot clearing if you find yourself having to land out - it's especially important as you get to smaller canopies that need longer and longer runways to land well. Your only option may be a section of road and you may have to hit the beginning of the road dead-on to have enough room to slow down.

The subject of canopy accuracy is too long to do justice to here, but the top 3 hints I've heard are:

- If you're not sure if you're going to make it over a wire or tree, look at what it's doing with respect to the background. If more background is appearing from beneath the wire or tree, you're probably going to make it.